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CLAIMS

[Claim(s)]

[Claim 1] (a) The polyamide resin constituent which consists of the polyamide resin 100 weight section, the (b) nonionic surfactant 0.005 – the 0.3 weight sections, and the metal salt 0.01 of (c) aliphatic carboxylic acid – the 0.5 weight sections.

[Claim 2] (a) The polyamide resin constituent according to claim 1 whose polyamide resin is Nylon 66 or Nylon 66 / 6 copolymerization object, or the mixture of Nylon 66 and nylon 6.

[Claim 3] (b) The polyamide resin constituent according to claim 1 characterized by HLB of a nonionic surfactant being ten or more.

[Claim 4] (c) The polyamide resin constituent according to claim 1 with which it is characterized by the thing for which the metal salt of aliphatic carboxylic acid was chosen from montanoic acid calcium, montanoic acid sodium, a montanoic acid lithium, the stearin acid aluminum, calcium stearate, and zinc stearate, and which is a kind at least.

[Claim 5] (b) The polyamide resin constituent according to claim 2 characterized by HLB of a nonionic surfactant being ten or more.

[Claim 6] (a) The polyamide resin constituent according to claim 1 with which polyamide resin is Nylon 66 or Nylon 66 / 6 copolymerization object, HLB of the (b) nonionic surfactant is ten or more, and it is characterized by the thing for which the metal salt of (c) aliphatic carboxylic acid was chosen from montanoic acid calcium, montanoic acid sodium, a montanoic acid lithium, the stearin acid aluminum, calcium stearate, and zinc stearate, and which is a kind at least.

[Claim 7] (a) The polyamide resin constituent with which it is the polyamide resin constituent which consists of the polyamide resin 100 weight section, the (b) nonionic surfactant 0.005 – the 0.3 weight sections, and the metal salt 0.01 of (c) aliphatic carboxylic acid – the 0.5 weight sections, and the mold goods which fabricate this polyamide resin constituent and are obtained are characterized by becoming the range of 2.0–3.0 with the sulfuric-acid relative viscosity (etar) of JIS-K6810.

[Claim 8] (a) The polyamide resin constituent according to claim 7 whose polyamide resin is Nylon 66 or Nylon 66 / 6 copolymerization object, or the mixture of Nylon 66 and nylon 6.

[Claim 9] (b) The polyamide resin constituent according to claim 7 characterized by HLB of a nonionic surfactant being ten or more.

[Claim 10] (c) The polyamide resin constituent according to claim 7 with which it is characterized by the thing for which the metal salt of aliphatic carboxylic acid was chosen from montanoic acid calcium, montanoic acid sodium, a montanoic acid lithium, the stearin acid aluminum, calcium stearate, and zinc stearate, and which is a kind at least.

[Claim 11] (b) The polyamide resin constituent according to claim 8 characterized by HLB of a nonionic surfactant being ten or more.

[Claim 12] (a) The polyamide resin constituent according to claim 7 with which polyamide resin is Nylon 66 or Nylon 66 / 6 copolymerization object, HLB of the (b) nonionic surfactant is ten or more, and it is characterized by the thing for which the metal salt of (c) aliphatic carboxylic acid was chosen from montanoic acid calcium, montanoic acid sodium, a montanoic acid lithium, the stearin acid aluminum, calcium stearate, and zinc stearate, and which is a kind at least.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to a polyamide resin constituent. The mold-release characteristic at the time of injection molding is good in detail, there is little pellet adhesion in a making machine hopper, and it is related with the polyamide resin constituent excellent in the fire retardancy of the mold goods obtained.

[0002]

[Description of the Prior Art] Polyamide resin is resin excellent in a mechanical property, thermal resistance, oilproof, fire retardancy, etc., and industrially, injection-molding processing is mainly carried out and it is used for the large application. In case injection-molding processing of the polyamide resin is carried out, the method of adding lubricant to polyamide resin and improving a mold-release characteristic etc. is proposed. The polyamide resin constituent which contains the salt of the aliphatic carboxylic acid of carbon numbers 10-20 and with a carbon numbers of 22 or more aliphatic carboxylic acid, or its derivative in polyamide resin as the concrete example (JP,52-42549,A official report), Although the polyamide constituent (JP,54-103460,A) which added the aliphatic-carboxylic-acid aluminum salt and the with a carbon numbers of 22 or more aliphatic carboxylic acid, or its diol ester of carbon numbers 12-20 is known to polyamide resin With these well-known techniques, although improved, when powder-like lubricant carried out omission scattering, the mold-release characteristic worsened work environment, and had caused fluctuation to the mold-release characteristic. Moreover, it had the problem which needs cleaning which removes a hopper at the time of ingredient exchange for a making machine hopper in order that a pellet may carry out an adhesion residual.

[0003] After making the partial saturation fatty alcohol in which the shape of liquid is shown by the ordinary state adhere to the front face of a polyamide pellet in order to solve these problems, the polyamide constituent (JP,57-137325,A) to which the metal salt of a higher fatty acid was made to adhere further is proposed. However, the phenomenon in which a pellet carries out the adhesion residual of the constituent obtained with this technique at a making machine hopper although a mold-release characteristic and the omission dustability of lubricant improve was difficult to maintain the fire-resistant level of the obtained mold goods at altitude it not to not only be improved, but.

[0004]

[Problem(s) to be Solved by the Invention] That is, the polyamide resin constituent excellent in the fabricating-operation nature which fills simultaneously a mold-release characteristic, the pellet adhesion to a hopper, and fire retardancy with the conventional technique was not obtained, but it was strongly anxious for the polyamide resin constituent which has improved these at once. This invention aims at offering the polyamide resin constituent which has solved these problems at once.

[0005]

[Means for Solving the Problem] In order to solve said technical problem, as a result of repeating examination wholeheartedly, this invention persons find out that the polyamide resin constituent which consists of polyamide resin, a specific nonionic surfactant, and a metal salt of specific

aliphatic carboxylic acid can solve all the above-mentioned technical problems, and came to complete this invention.

[0006] This invention Namely, the (a) polyamide resin 100 weight section, the (b) nonionic surfactant 0.005 – the 0.3 weight sections, And it is the polyamide resin constituent which consists of a metal salt 0.01 of (c) aliphatic carboxylic acid – the 0.5 weight sections. Moreover, the (a) polyamide resin 100 weight section, the (b) nonionic surfactant 0.005 – the 0.3 weight sections, The mold goods which are the polyamide resin constituents which consist of a metal salt 0.01 of (c) aliphatic carboxylic acid – the 0.5 weight sections, fabricate this polyamide resin constituent and are obtained and with the sulfuric-acid relative viscosity (etar) of JIS-K6810 It is the polyamide resin constituent characterized by becoming the range of 2.0–3.0.

[0007] This invention is explained to a detail below. The polyamides from which (a) polyamide resin used for this invention is obtained by the condensation polymerization of the diamine of Nylon 66 and 46,610,612 grades, and dicarboxylic acid Nylon 6, 11, the poly lactams of 12 grades, Nylon 66 / 6, Nylon 66 / 6T, The mixture of copolymerization polyamides, such as 66/6I, and the above-mentioned polyamide is mentioned. Although there will be especially no constraint if it is polyamide resin used for shaping, the mold goods of the resin constituent eventually obtained using Nylon 66, Nylon 66 / 6 copolymerization object are the sulfuric-acid relative viscosity (etar) of JIS-K6810. If polyamide resin is chosen so that it may become the range of 2.0–3.0, especially since bigger effectiveness is expectable from the point of fire retardancy and the mold-release characteristic at the time of shaping, it is desirable.

[0008] the (b) nonionic surfactant used by this invention -- a polyoxyalkylene fatty-acid-ester system, a polyoxyalkylene alkyl ether system, a polyoxyalkylene alkylphenol ether system, a sorbitan fatty acid ester system, or a polyoxyalkylene sorbitan fatty acid ester system -- and -- or such mixture etc. is mentioned.

[0009] Specifically Polyoxyethylene mono-laurate, polyoxyethylene monostearate, Polyoxyethylene monooleate, the polyoxyethylene lauryl ether, Polyoxyethylene stearyl ether, the polyoxyethylene oleyl ether, The polyoxyethylene tridecyl ether, the polyoxyethylene nonylphenyl ether, Polyoxyethylene octyl phenyl ether, sorbitan monolaurate, Sorbitan monostearate, sorbitan monooleate, sorbitan trioleate, Polyoxyethylene sorbitan monolaurate, polyoxyethylenesorbitan monostearate, Polyoxyethylene sorbitan monooleate etc. is contained and these nonionic surfactants have ten or more things suitable for HLB (hydrophile-lipophile balance). With less than ten nonionic surfactant, a fire-resistant improvement effect is not acquired for HLB with pellet adhesion in a making machine hopper.

[0010] HLB said here is what expressed the balance of the hydrophilic group and hydrophobic group of a surface active agent numerically, and it is in the range of 0–20, and defines as a value which divided the percentage by weight of the hydrophilic group in a surface active agent by 5. ((edited by) The Chemical Society of Japan "a chemistry handbook (the 2nd edition of revision edited by application)" Refer to 1077 pages, Maruzen, and Showa 48)

the addition of a nonionic surfactant -- the polyamide resin 100 weight section -- receiving -- the 0.005 – 0.3 weight section -- the 0.01 – 0.1 weight section is optimum dose preferably.

[0011] In under the 0.005 weight section, it is not desirable in order for the further effectiveness not to be acquired by omission scattering prevention of lubricant and for a pellet to block rather, if the effectiveness of holding the metal salt of powdery aliphatic carboxylic acid on a pellet front face falls, and omission scattering of lubricant occurs and the 0.3 weight section is exceeded. As a metal salt of (c) aliphatic carboxylic acid used by this invention A capric acid, a lauric acid, a myristic acid, a palmitic acid, stearin acid, Although the sodium salt of with a carbon numbers [, such as behenic acid, a cerotic acid, a montanoic acid, a melissic acid oleic acid, and an erucic acid,] of nine or more aliphatic carboxylic acid, lithium salt, a calcium salt, magnesium salt, zinc salt, an aluminum salt, etc. are mentioned Acquisition is industrially easy and montanoic acid calcium, montanoic acid sodium, a montanoic acid lithium, the stearin acid aluminum, calcium stearate, and zinc stearate are suitably used especially for a mold-release characteristic as an object with the high operation effectiveness.

[0012] the addition of the metal salt of aliphatic carboxylic acid -- the polyamide resin 100 weight section -- receiving -- the 0.01 – 0.5 weight section -- it is the 0.03 – 0.3 weight section

preferably. Under in the 0.01 weight section, if a mold-release characteristic is not improved and the 0.5 weight section is exceeded, an improvement of the further mold-release characteristic will not be obtained. It found out that the polyamide resin constituent which turns into the polyamide resin constituent of this invention, i.e., polyamide resin and a specific nonionic surfactant, from the metal salt of specific aliphatic carboxylic acid could improve simultaneously the pellet adhesion residual to a mold-release characteristic and a making machine hopper, and fire retardancy, and this invention was completed.

[0013] Especially the process of the constituent of this invention is not limited and is manufactured by mixing with a specific nonionic surfactant by the approach of common knowledge of the metal salt of specific aliphatic carboxylic acid on the front face of a polyamide resin pellet. Although there are an approach of mixing with the well-known mixed approach on a pellet front face with blenders, such as a tumbler and a Henschel mixer, the approach of mixing using the pneumatic transportation line of a particulate matter, etc., you may obtain using which approach.

[0014] Moreover, about the constituent of this invention, it is the range which does not spoil remarkably the effectiveness made into the object, and reinforcing materials, such as additives, such as a thermostabilizer, an antioxidant, and a weatherproof amelioration agent, a glass fiber, and an inorganic filler, other resin, etc. can be added in the phase of arbitration.

[0015]

[Embodiment of the Invention] Hereafter, although an example and the example of a comparison explain this invention to a detail further, there is no this invention what is limited to this example. In the example and the example of a comparison, a mold-release characteristic, pellet adhesion, fire retardancy, and the sulfuric-acid relative viscosity of a pellet and mold goods were measured by the following approach.

[0016] (A) Mold-release characteristic (process condition)

Injection molding machine : Toshiba Machine Co., Ltd. make IS90B metal mold : Cop-like mold goods (metal mold described in drawing 1)

Cylinder temperature: 280-degree-C die temperature : 80-degree-C injection pressure : 400 kg/cm² injection speed : 30% injection time amount : 7-second cooldown delay : 20 seconds (measuring method)

(1) It fabricated by the above-mentioned process condition using the metal mold furnished with the release-force measuring device shown in release-force drawing 1 , the release force from the 31st shot to 35 shots was measured, and the average was calculated.

[0017] (2) The ejector mechanism mark of the mold goods at the time of deformation release-force measurement of mold goods was observed, and it was shown in tables 1-3 as "deformation."

(B) It asked for the number of the pellets which carried out the adhesion residual of the pellet of a polyamide resin constituent after 3kg shaping at the making machine hopper, and shaping at the time of pellet adhesion mold-release characteristic measurement was shown in tables 1-3 as "pellet coating weight."

[0018] (C) Fire retardancy (process condition)

Injection molding machine : NISSEI PLASTIC INDUSTRIAL CO., LTD. make PS40E mold goods The 0.8mmx12.7mmx127mm test piece cylinder temperature for UL94 combustion tests : : 280-degree-C die temperature : 80-degree-C injection pressure : 600 kg/cm² injection speed : 50% injection time amount : 5-second cooldown delay : Using the test piece of 0.8mm thickness fabricated by said process condition for 10 seconds (measuring method), by the well-known approach specified to UL94, the combustion test was carried out, five test pieces performed a total of 10 times of ****, and the average burning time at this time was found.

[0019] (D) A sulfuric-acid relative viscosity polyamide resin pellet and the sulfuric-acid relative viscosity of mold goods are well-known JIS. The approach by the sulfuric-acid solution of K6810 relative viscosity was followed. Furthermore, the polyamide resin, aliphatic-carboxylic-acid metal salt, and nonionic surfactant which were used by this example are shown below.

[0020] (1) Polyamide resin A : Nylon 66 homopolymer (sulfuric-acid relative viscosity η_{sp}/c =2.80)
B: Nylon 66 homopolymer (sulfuric-acid relative viscosity η_{sp}/c =3.28)

C: Nylon 66 homopolymer (sulfuric-acid relative viscosity $\eta_{sp}/c = 2.29$)

D: Nylon 66 homopolymer (sulfuric-acid relative viscosity $\eta_{sp}/c = 2.04$)

E: Nylon 66/6 (98/2) copolymer (sulfuric-acid relative viscosity $\eta_{sp}/c = 2.82$)

F: Nylon 66/6 (90/10) copolymer (sulfuric-acid relative viscosity $\eta_{sp}/c = 2.85$)

(2) aliphatic-carboxylic-acid metal salt aluminum stearate: -- SA#1000 calcium-stearate [of Sakai Chemical Industry Co., Ltd.]; -- SC#100 zinc-stearate [of Sakai Chemical Industry Co., Ltd.]; -- SZ#2000 montanoic-acid calcium [of Sakai Chemical Industry Co., Ltd.]; -- the Hoechst industry Co., Ltd. -- HOSUTAMONTO CaV102 montanoic-acid lithium: -- The Hoechst industry Co., Ltd. -- HOSUTAMONTO TPLiV103 montanoic-acid sodium: -- the HOSUTAMONTO NaV101(3) nonionic-surfactant surface-active-agent a: polyoxyethylene NONIFE nil ether (Nonion NS-206 of Nippon Oil & Fats Co., Ltd.) of Hoechst Industry Surface active agent b: Polyoxyethylene nonylphenyl ether (Nonion NS-212 of Nippon Oil & Fats Co., Ltd.)

Surface active agent c: Polyoxyethylene nonylphenyl ether (Nonion NS-202S of Nippon Oil & Fats Co., Ltd.)

Surface active agent d: Polyoxyethylene tridecyl ether (Nonion T-208.5 of Nippon Oil & Fats Co., Ltd.)

Surface active agent e: Polyoxyethylene sorbitan monolaurate (Nonion LT-221 of Nippon Oil & Fats Co., Ltd.)

Surface active agent f: Sorbitan trioleate (Nonion OP-85R of Nippon Oil & Fats Co., Ltd.)

(4) other additive montanoic acid ester: -- Hoechst wax E oleyl alcohol [of Hoechst Industry]; -- the reagent [0021] Of Katayama Chemical industry

[Examples 1-10] With the sulfuric-acid relative viscosity (η_{sp}/c) of JIS-K6810, the specified quantity (table 1 reference) of a Nylon 66 pellet 25kg of 2.80, and ten or more HLB specific nonionic surfactant Cone mold blender ON **** of the 120l. volume and an engine speed were blended by 44rpm, the metal salt of aliphatic carboxylic acid was further blended for 3 minutes at specified quantity ***** and the same engine speed after the blend for 3 minutes, the constituent was obtained, it fabricated and measured by the above-mentioned approach, and the result was shown in a table 1.

[0022]

[A table 1]

		ポリ ミ の 種類	上段： 脂肪酸族の 金属塩	添加 量	非イ オン 界面 活性 剤の HLB	離型 力 [Kg]	変形	ペレ ット 付着 量 [粒]	燃焼 時間 [秒]	成形 品の 相対 粘度 η_r
			下段： 非イオン 界面活性剤	[部]						
実 施 例	1	A	ステアリン酸アルミニウム 界面活性剤 a	0.2 0.07	11	98	無し	0	4	2.78
	2	A	ステアリン酸アルミニウム 界面活性剤 b	0.2 0.07	14	105	無し	0	3	2.75
	3	A	ステアリン酸アルミニウム 界面活性剤 d	0.2 0.07	13	102	無し	0	2	2.76
	4	A	ステアリン酸アルミニウム 界面活性剤 e	0.2 0.07	17	111	無し	0	2	2.78
	5	A	ステアリン酸アルミニウム 界面活性剤 e	0.05 0.03	17	124	無し	0	7	2.85
	6	A	ステアリン酸アルミニウム 界面活性剤 e	0.3 0.1	17	60	無し	0	2	2.79
	7	A	ステアリン酸カルシウム 界面活性剤 e	0.2 0.07	17	120	無し	0	2	2.80
	8	A	ステアリン酸亜鉛 界面活性剤 e	0.2 0.07	17	134	無し	0	2	2.84
	9	A	モンタン酸カルシウム 界面活性剤 e	0.2 0.07	17	67	無し	0	4	2.81
	10	A	モンタン酸リチウム 界面活性剤 e	0.2 0.07	17	83	無し	0	3	2.87

[0023]

[Example 11] As a polyamide, except having used the Nylon 66 pellet of 3.28 with the sulfuric-acid relative viscosity (η_r) of JIS-K6810, the constituent was obtained by the same approach as examples 1-10, it fabricated and measured by the above-mentioned approach, and the result was shown in a table 2.

[0024]

[Example 12] As a polyamide, except having used the Nylon 66 pellet of 2.29 with the sulfuric-acid relative viscosity (η_r) of JIS-K6810, the constituent was obtained by the same approach as examples 1-10, it fabricated and measured by the above-mentioned approach, and the result was shown in a table 2.

[0025]

[Example 13] As a polyamide, except having used the pellet of Nylon 66 / 6 (monomer weight ratios 98/2) copolymerization polymer of 2.82 with the sulfuric-acid relative viscosity (η_r) of JIS-K6810, the constituent was obtained by the same approach as examples 1-10, it fabricated and measured by the above-mentioned approach, and the result was shown in a table 2.

[0026]

[Example 14] As a polyamide, except having used the pellet of Nylon 66 / 6 (monomer weight ratios 90/10) copolymerization polymer of 2.85 with the sulfuric-acid relative viscosity (η_r) of JIS-K6810, the constituent was obtained by the same approach as examples 1-10, it fabricated and measured by the above-mentioned approach, and the result was shown in a table 2.

[0027]

[The examples 1-2 of a comparison] Except having used the six or less HLB nonionic surfactant,

the constituent was obtained by the same approach as examples 1-10, it fabricated and measured by the above-mentioned approach, and the result was shown in a table 2.

[0028]

[The example 3 of a comparison] Except not adding a nonionic surfactant, the constituent was obtained by the same approach as examples 1-10, it fabricated and measured by the above-mentioned approach, and the result was shown in a table 2.

[0029]

[The example 4 of a comparison] Except not adding the metal salt of aliphatic carboxylic acid, the constituent was obtained by the same approach as examples 1-10, it fabricated and measured by the above-mentioned approach, and the result was shown in a table 2.

[0030]

[The example 5 of a comparison] Instead of the nonionic surfactant, except having added montanoic acid ester, the constituent was obtained by the same approach as examples 1-10, it fabricated and measured by the above-mentioned approach, and the result was shown in a table 2.

[0031]

[The example 6 of a comparison] Except having added liquefied oleyl alcohol by the ordinary state instead of the nonionic surfactant, the constituent was obtained by the same approach as examples 1-10, it fabricated and measured by the above-mentioned approach, and the result was shown in a table 2.

[0032]

[A table 2]

		シリ ミ の 種類	上段： 脂肪酸の 金属塩	添加 量	非イ オン 界面 活性 剤の	離型 力	変形	ペレ ット 付着 量	燃焼 時間	成形 品の 相対 粘度 η_r
			下段： 非イオン 界面活性剤	[部]	HLB	[Kg]		[粒]	[秒]	
実 施 例	11	B	ステアリン酸アルミニウム 界面活性剤 e	0.2 0.07	17	102	無し	0	9	2.96
	12	C	ステアリン酸アルミニウム 界面活性剤 e	0.2 0.07	11	94	無し	0	4	2.03
	13	E	モンタン酸ナトリウム 界面活性剤 e	0.2 0.07	17	99	無し	0	2	2.81
	14	F	モンタン酸ナトリウム 界面活性剤 e	0.2 0.07	17	108	無し	0	3	2.83
比 較 例	1	A	ステアリン酸アルミニウム 界面活性剤 c	0.2 0.07	6	74	無し	14	18	2.77
	2	A	ステアリン酸アルミニウム 界面活性剤 f	0.2 0.07	2	67	無し	18	23	2.74
	3	A	ステアリン酸アルミニウム -----	0.2 --	--	136	無し	16	12	2.79
	4	A	----- 界面活性剤 e	-- 0.07	17	202	有り	15	14	2.82
	5	A	ステアリン酸カルシウム モンタン酸エステル	0.2 0.07	--	54	無し	22	18	2.81
	6	A	ステアリン酸カルシウム オレイルアルコール	0.2 0.07	--	72	無し	7	23	2.79

[0033]

[The example 7 of a comparison] As a polyamide, except having used the Nylon 66 pellet of 3.28 with the sulfuric-acid relative viscosity (η_{tar}) of JIS-K6810, the constituent was obtained by the same approach as examples 1-10, it fabricated and measured by the above-mentioned approach, and the result was shown in a table 3. In addition, as for the burning time, the mold goods as specification were not obtained for poor floating.

[0034]

[The example 8 of a comparison] As a polyamide, except having used irone 66 pellet of 2.04 with the sulfuric-acid relative viscosity (η_{tar}) of JIS-K6810, the constituent was obtained by the same approach as examples 1-10, it fabricated and measured by the above-mentioned approach, and the result was shown in a table 3. In addition, at the time of mold release, mold goods could break through the release force by the ejector pin, and were not able to measure it.

[0035]

[A table 3]

		ポリ ミド の 種類	上段： 脂肪酸族の 金属塩	添加 量	非イ オン 界面 活性 剤の	離型 力	変形	ペレ ット 付着 量	燃焼 時間	成形 品の 相対 粘度 η_{r}
			下段： 非イオン 界面活性剤	[部]	HLB	[Kg]		[粒]	[秒]	
比 較 例	7	B	ステアリン酸アルミニウム 界面活性剤 a	0.2 0.07	11	121	無し	0	*	3.21
	8	D	ステアリン酸アルミニウム 界面活性剤 e	0.2 0.07	17	**	破壊	0	3	1.87

[0036]

[Effect of the Invention] The effectiveness that the pellet adhesion residual to the technical problem which the conventional technique was holding, i.e., a mold-release characteristic, and a making machine hopper, and fire retardancy are simultaneously improvable with the polyamide resin constituent of this invention is done so.

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PATENT ABSTRACTS OF JAPAN

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(71)Applicant : ASAHI CHEM IND CO LTD

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(54) POLYAMIDE RESIN COMPOSITION

(57)Abstract:

PROBLEM TO BE SOLVED: To obtain a polyamide resin compsn. which satisfies all the requirements of mold release characteristics, adhesion of pellets to a hopper, and flame retardance and is excellent in moldability by compounding a polyamide resin with a nonionic surfactant and a metal salt of an aliph. carboxylic acid.

SOLUTION: This compsn. contains 100 pts.wt. polyamide resin, 0.005-0.3 pt.wt. nonionic surfactant, and 0.01-0.5 pt.wt. metal salt of an aliph. carboxylic acid. Nylon 66, nylon 66/6, or a mixture of these resins is used as the polyamide resin, and it is pref. in terms of flame retardance and mold release characteristics on molding if the polyamide resin is selected so that the finally resulting molded item has a sulfuric acid relative viscosity (η_r) (according to JIS K6810) of in the range of 2.0-3.0. The surfactant is pref. one having an HLB of 10 or higher. Pref. examples of the metal salt are Ca, Na, and Li salts of montanic acid and Al, Ca, and Zn salts of stearic acid, etc.

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